

## **LCLUC Abstract**

### **The Spatial and Temporal Dimensions of Contemporary U.S. Land Cover and Land Use Change and Implications for Carbon Dynamics**

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The study is focused on an assessment of the spatial and temporal dimensions of contemporary U.S. land use and land cover change and the subsequent consequences of the change on local, regional, and national carbon dynamics. The research objectives are to: (1) determine how the rates of conterminous U.S. land use and land cover change vary over (a) time, (b) space, and (c) sector (e.g., type of land cover conversion); and (2) assess how changes in conterminous U.S. land cover and land use affect local, regional, and national carbon fluxes. A low cost sampling strategy based on ecoregions is being used to localize estimates of the rates of land use and land cover change and to estimate the corresponding consequences on carbon status. For each of 84 ecoregions, a set of 20 km by 20 km blocks samples were selected using stratified random probability sampling. The overall sample consists of over 800 sample sites representing approximately seven percent of the conterminous U.S. The estimates of change are based on five dates of Landsat MSS, TM, and ETM data (nominally 1973, 1980, 1986, 1992, and 2000). Our goal is to identify  $\geq 1\%$  change in land cover within each ecoregion, at an 85% confidence level. From this, we are using the CENTURY ecosystem model to simulate carbon consequences at three scales (for each of the 20 by 20 km sampled blocks, for each of the 84 corresponding ecoregions, and for a national summary). We expect that the results will provide a clearer understanding of the variability of land use and land cover change across the U.S. and the corresponding consequences of that change on carbon stocks and fluxes.